

(ii) The employee must be hoisted in a slow, controlled descent and ascent.

(iii) The employee must use personal fall protection equipment, including a full body harness, independently attached to the lower load block or overhaul ball.

(iv) The fall protection equipment must meet the applicable requirements in § 1926.502.

(v) The boatswain's chair itself (excluding the personal fall arrest system anchorages), must be capable of supporting, without failure, its own weight and at least five times the maximum intended load.

(vi) No more than one person must be hoisted at a time.

(q) [Reserved.]

(r) *Hoisting personnel for marine transfer.* When hoisting employees solely for transfer to or from a marine worksite, the following requirements must be met:

(1) The employee must be in either a personnel platform or a marine-hoisted personnel transfer device.

(2) If using a personnel platform, paragraphs (a) through (n) of this section apply.

(3) If using a marine-hoisted personnel transfer device:

(i) The following paragraphs of this section apply: (a), (c)(2), (d)(1), (d)(3), (d)(4), (e)(1) through (5), (e)(12), (f)(1), (g), (h), (j), (k)(1), (k)(8), (k)(9), (k)(10)(ii), (k)(11)(i), (k)(12), (m), and (n). Where the terms "personnel platform" or "platform" are used in these paragraphs, substitute them with "marine-hoisted personnel transfer device."

(ii) The transfer device must be used only for transferring workers.

(iii) The number of workers occupying the transfer device must not exceed the maximum number it was designed to hold.

(iv) Each employee must wear a U.S. Coast Guard personal flotation device approved for industrial use.

(s) *Hoisting personnel for storage-tank (steel or concrete), shaft and chimney operations.* When hoisting an employee in storage tank (steel or concrete), shaft and chimney operations, the following requirements must be met:

(1) The employee must be in a personnel platform except when the em-

ployer can demonstrate that use of a personnel platform is infeasible; in such a case, a boatswain's chair must be used.

(2) If using a personnel platform, paragraphs (a) through (n) of this section apply.

(3) If using a boatswain's chair:

(i) The following paragraphs of this section apply: (a), (c), (d)(1), (d)(3), (d)(4), (e)(1), (e)(2), (e)(3), (f)(1), (f)(2)(i), (f)(3)(i), (g), (h), (k)(1), (k)(6), (k)(8), (k)(9), (k)(11)(i), (m), (n). Where the terms "personnel platform" or "platform" are used in these paragraphs, substitute them with "boatswain's chair."

(ii) The employee must be hoisted in a slow, controlled descent and ascent.

(iii) The employee must use personal fall protection equipment, including a full body harness, attached independent of the crane/derrick. When there is no adequate structure for attachment of personal fall arrest equipment as required in § 1926.502(d)(15), the attachment must be to the lower load block or overhaul ball.

(iv) The fall protection equipment must meet the applicable requirements in § 1926.502.

(v) The boatswain's chair itself (excluding the personal fall arrest system anchorages), must be capable of supporting, without failure, its own weight and at least five times the maximum intended load.

(vi) No more than one person must be hoisted at a time.

§ 1926.1432 Multiple-crane/derrick lifts—supplemental requirements.

(a) *Plan development.* Before beginning a crane/derrick operation in which more than one crane/derrick will be supporting the load, the operation must be planned. The planning must meet the following requirements:

(1) The plan must be developed by a qualified person.

(2) The plan must be designed to ensure that the requirements of this subpart are met.

(3) Where the qualified person determines that engineering expertise is needed for the planning, the employer must ensure that it is provided.

(b) *Plan implementation.*

(1) The multiple-crane/derrick lift must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons (lift director).

(2) The lift director must review the plan in a meeting with all workers who will be involved with the operation.

§ 1926.1433 Design, construction and testing.

The following requirements apply to equipment that has a manufacturer-rated hoisting/lifting capacity of more than 2,000 pounds.

(a) Crawler, truck and locomotive cranes manufactured prior to November 8, 2010 must meet the applicable requirements for design, construction, and testing as prescribed in ANSI B30.5-1968 (incorporated by reference, *see* § 1926.6), PCSA Std. No. 2 (1968) (incorporated by reference, *see* § 1926.6), the requirements in paragraph (b) of this section, or the applicable DIN standards that were in effect at the time of manufacture.

(b) Mobile (including crawler and truck) and locomotive cranes manufactured on or after November 8, 2010 must meet the following portions of ASME B30.5-2004 (incorporated by reference, *see* § 1926.6) as applicable:

(1) In section 5-1.1.1 ("Load Ratings—Where Stability Governs Lifting Performance"), paragraphs (a)—(d) (including subparagraphs).

(2) In section 5-1.1.2 ("Load Ratings—Where Structural Competence Governs Lifting Performance"), paragraph (b).

(3) Section 5-1.2 ("Stability (Backward and Forward)").

(4) In section 5-1.3.1 ("Boom Hoist Mechanism"), paragraphs (a), (b)(1) and (b)(2), except that when using rotation resistant rope, § 1926.1414(c)(4)(ii)(A) applies.

(5) In section 5-1.3.2 ("Load Hoist Mechanism"), paragraphs (a)(2) through (a)(4) (including subparagraphs), (b) (including subparagraphs), (c) (first sentence only) and (d).

(6) Section 5-1.3.3 ("Telescoping Boom").

(7) Section 5-1.4 ("Swing Mechanism").

(8) In section 5-1.5 ("Crane Travel"), all provisions except 5-1.5.3(d).

(9) In section 5-1.6 ("Controls"), all provisions except 5-1.6.1 (c).

(10) Section 5-1.7.4 ("Sheaves").

(11) Section 5-1.7.5 ("Sheave sizes").

(12) In section 5-1.9.1 ("Booms"), paragraph (f).

(13) Section 5-1.9.3 ("Outriggers").

(14) Section 5-1.9.4 ("Locomotive Crane Equipment").

(15) Section 5-1.9.7 ("Clutch and Brake Protection").

(16) In section 5-1.9.11 ("Miscellaneous equipment"), paragraphs (a), (c), (e), and (f).

(c) Prototype testing: mobile (including crawler and truck) and locomotive cranes manufactured on or after November 8, 2010 must meet the prototype testing requirements in Test Option A or Test Option B of this section. Tower cranes manufactured on or after November 8, 2010 must meet the prototype testing requirements in BS EN 14439:2006 (incorporated by reference, *see* § 1926.6).

NOTE: Prototype testing of crawler, locomotive and truck cranes manufactured prior to November 8, 2010 must conform to paragraph (a) of this section.

(1) *Test Option A.*

(i) The following applies to equipment with cantilevered booms (such as hydraulic boom cranes): All the tests listed in SAE J1063 (Nov. 1993) Table 1 (incorporated by reference, *see* § 1926.6) must be performed to load all critical structural elements to their respective limits. All the strength margins listed in SAE J1063 (Nov. 1993) Table 2 (incorporated by reference, *see* § 1926.6) must be met.

(ii) The following applies to equipment with pendant supported lattice booms: All the tests listed in SAE J987 (Jun. 2003) Table 1 (incorporated by reference, *see* § 1926.6) must be performed to load all critical structural elements to their respective limits. All the strength margins listed in SAE J987 (Jun. 2003) Table 2 (incorporated by reference, *see* § 1926.6) must be met.

(2) *Test Option B.* The testing and verification requirements of BS EN 13000:2004 (incorporated by reference, *see* § 1926.6) must be met. In applying BS EN 13000:2004, the following additional requirements must be met: